

"PARTASHNIKOVA, M.Z.; SHAFRAN, I.G.

"Sulfarsazen" as a complexometric indicator for zinc, cadmium, nickel, and lead. Zhur. anal. khim. 20 no.3:313-319 '65. (MIRA 18:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistyykh khimicheskikh veshchestv, Moskva.

BAZHANOVA, I.A.; SHAFRAN, I.G.

Determination of heavy metal impurities in reagents by the  
reversed dithizonate method. Zav. lab. 31 no.11:1314-1315  
'65. (MIRA 19:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh  
reaktivov i osobo chistyykh khimicheskikh veshchestv.

05013-67 EWT/LAWE/ETI LP/21 27/21  
ACC NRI AT6031662 SOURCE CODE: UR/2674/65/000/027/0207/0214

AUTHOR: Shafran, I. G. ; Rozenblyum, V. P.

ORG: none

TITLE: Communication III. Kinetic biamperometric microdetermination of nanogram amounts of molybdenum

SOURCE: Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov i osobo chistyykh khimicheskikh veshchestv. Trudy, no. 27, 1965. Khimicheskkiye reaktivy i preparaty (Chemical reagents and preparations), 207-214

TOPIC TAGS: molybdenum, selenic acid, iodine

ABSTRACT: A kinetic biamperometric method of determine nanogram quantities of molybdenum has been developed. This method makes it possible to determine 0.002—0.003  $\mu$ g of molybdenum with a relative maximum error of 25%, and a mean square deviation of six determinations, equaling 0.0005  $\mu$ g. The influence of a series of additions on the precision of molybdenum determination by this method had been established. The significant accelerating effect of selenic acid

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ACC NR: AT6031662

on the reaction of iodine oxidation by hydrogen peroxide was discovered. The determination of small amounts of selenic acid is of interest in the development of a kinetic biamprometric method. The possibilities that this method will significantly increase the sensitivity of determination of a series of other elements are indicated. Orig. art. has: 4 figures and 2 tables.

SUB CODE: 07, 08/ SUBM DATE: none/ ORIG REF: 009/ OTH REF: 006/

Card 2/2 LC

*Shafraan I.K.*

137-1958-2-2774

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 2, p 81 (USSR)

AUTHORS: Chekmarev, A.P., Klimenko, V.M., Meleshko, V.I.,  
Chekhranov, V.D., Vorotyntsev, Yu.V., Shafraan, I.K.

TITLE: A Study of an 1150-millimeter Blooming Mill (Issledovaniye  
blyuminga 1150 mm)

PERIODICAL: Tr. In-ta chernoy metallurgii AN SSSR 1957, Vol 11,  
pp 152-174

ABSTRACT: A comprehensive investigation of the performance of an 1150-millimeter blooming mill showed that the actual amount of widening that occurs in the rolling of blooms and slabs is significantly greater than the customary calculations would indicate. This error in computation of the widening led to a faulty distribution of the reduction during each of the rolling passes. Measuring the pressure of the metal on the rolls and the current in the armature of the motor revealed the availability of reserve power, which could be used to increase the reduction in a given pass in the blooming mill. The greatest specific pressure in the rolling of mild and medium-carbon steels was exhibited by killed steel MZ subjected to cold upsetting. Curves of specific power consumption for the rolling

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137-1958-2-2774

A Study of an 1150-millimeter Blooming Mill

operation included here, should be useful in the planning and control of power use in a blooming mill. Time-and-motion studies showed the extent of and reasons for differences in the duration of passes and of the intervening pauses among various operators and made possible recommendations for cutting down production time and down time in blooming-mill operation.

V.D.

1. Rolling mills--Operation

Card 2/2

GARBER, K.S., dotsent; NIKITIN, A.I.; LYAUDIS, B.V.; MALINOVSKIY, B.N., kand. tekhn.nauk; BEL'SKIY, O.I.; VOLKOV, L.G.; KUZNETSOV, M.P.; KUTSENKO, A.D.; SOROKIN, A.A.; STAKHURSKIY, A.D.; TRUBITSYN, L.M.; TRUSEYEV, A.I.; SHAFRAN, I.K., inzh.; SHESTAK, P.I.; UL'YANOV, D.P.

Automatic control of converter smelting by means of compu' rs.  
Stal' 23 no. 7:608-610 J1 '63. (MIRA 16:9)

1. Dneprodzerzhinskiy metallurgicheskiy zavod-vtuz im. M.I. Arsenicheva (for Garger). 2. Institut kibernetiki AN UkrSSR (for Malinovskiy). 3. Zavod im. Dzerzhinskogo (for Shafran).

NEPEDOV, A.A.; BOROV, A.G.; SHAFRAN, I.K.; CHUVASHKO, A.M.; IVANTIN, V.P.;  
KONYUSHENKO, A.S.

Investigating the regularities of butt shrinkage during the rolling  
of high shapes. Izv.vys.ucheb.zav.; Chern.met. 8 no.8:89-93 '65.  
(MIRA 18:8)

1. Neopredvaritelny metallurgicheskiy zavod-vuz.



KLIMENKO, V.M.; MELESHEK, V.I.; CHALERANOV, V.D.; PAVLOV, V.L.;  
VOROTYNTSEV, Yu.V.; BORISOV, Te.M.; NAZARENKO, Kh.N.; SHAFRAN, I.K.

Increasing the output of blooming mills. Trudy Inst.chern.met.  
AN URSR 11:175-191 '57. (MLR 10:9)

(Rolling mills)

S/133/61/000/002/004/014  
A054/A033

AUTHORS: Medvedev, I.A., Docent, Bel'gol'skiy, B.P., Docent, Tareyko, N.A.,  
Engineer, and Shafran, I.K., Engineer

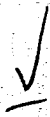
TITLE: Coordination of Rolling Mill Operations

PERIODICAL: Stal', 1961, No. 2, pp. 135-139

TEXT: It was found from photochronometrical recordings that the output of the two-high reversing blooming mill (1150) and the tube rolling mill [consisting of two-high reversing blooming (900) and three continuous stands (75)] of the new rolling workshop at the zavod im.Dzherzhinskiy (Plant im. Dzherzhinskiy) fell short of expectations. Lack of coordination in operating the various machines caused breakdowns amounting to 56% of the working time. The entire operation was graphically plotted with the aid of photography and in this way an indication of the metal flow and of the load of the machines in time was obtained (Fig.2). The graph showed that the output of the mill could be increased by supplying various types of billets and

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A054/A033



# Coordination of Rolling Mill Operations

slabs. Not only metal from the low-output pusher type furnace should be fed to the 900 mill, but also "transit"-billets and slabs for other workshops of the factory, which do not require heating in the pusher type furnace. In order to ensure the uniform loading of all machines of the unit, the mathematical relationships were determined. Thus, the uniform feed of the two mills - both rolling different products - could be determined by

$$C_1 T_1 + C_2 T_2 = C_1 t_1 + C_2 t_2 \quad (1)$$

where  $C_1, C_2$  - the quantity of products of the first and second into the mill;  $T_1, T_2$  - the time it takes to roll a unit-quantity of the two different products on the first stand,  $t_1, t_2$  - idem on the second stand. The quantitative relation of the two kinds of products ensuring a uniform output on both mills is

$$\frac{C_1}{C_2} = \frac{t_2 - T_2}{T_1 - t_1} \quad (2)$$

For three mills, when one of them works for the other two, the expedient load will be determined by:

$$C_1 T_1 + C_2 T_2 = C_1 t_1 = C_2 t_2 \quad (3)$$

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where  $\tau_2$  - time it takes to roll a product unit on the third mill. The amount of "transit" metal is determined by the production ratio of furnace F (t/h) and of mill 900, when rolling metal coming from the furnace  $F_1$  and the "transit"-furnace  $F_2$ . The quantity of metal rolled on mill 900 as intermediate product in one hour amounts to

$$K_t = \left(1 - \frac{F}{F_1}\right) F_2 \quad (4)$$

Mill 1500 has at the same time to roll  $K_t$  amount of metal to be passed on to mill 900 as "transit" product, while during the remaining time tubes can be rolled in a quantity corresponding to the capacity of the heating furnaces, as well as slabs for the general workshops. The relation between the various metal flows was determined from the metal-consumption coefficient for the blooming mill and its average output. It was found that the efficiency ratio of the mills did not tally with the ratio of their operational time. The productivity of mill 1500 on which two ingots can be rolled at a time, was higher than that of mill 900. However, the low output of pit furnaces creates the bottleneck in the production process. Their capacity can be raised by increasing the temperature of ingots during feeding, by reducing

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AO54/A033

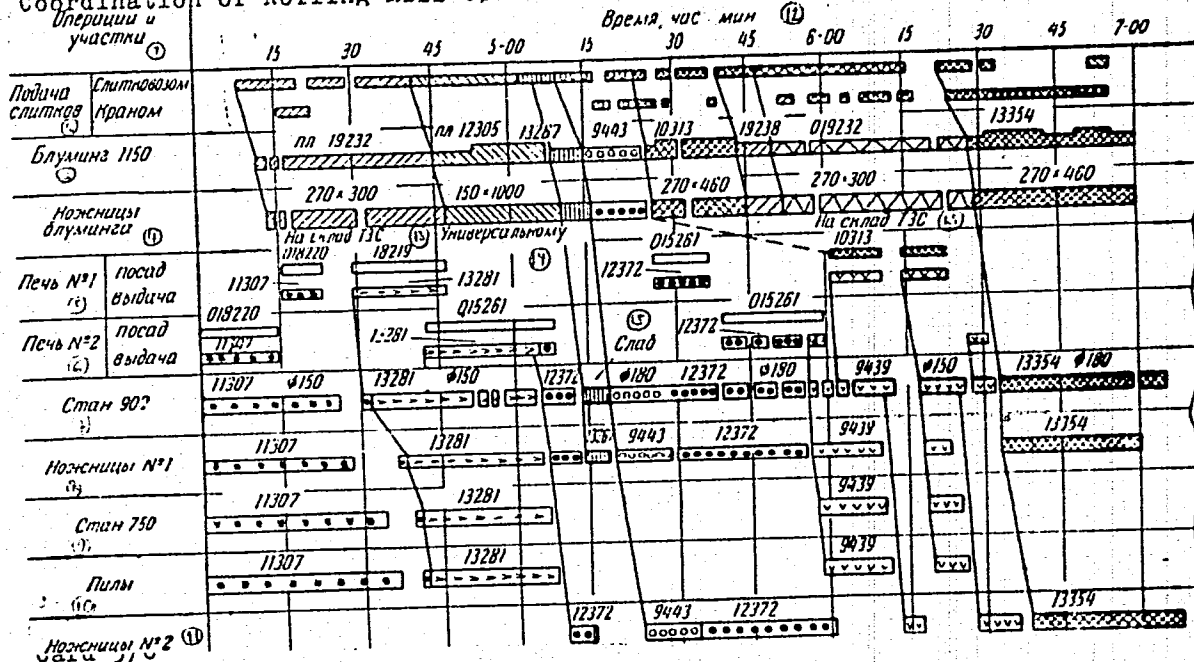
the time of cold feeding, eliminating idle time and not retain metal in them any longer than necessary, moreover, by intensifying the heating of ingots and increasing the number of travelling cranes. By drawing up a detailed operation-schedule for the mills in question, according to the investigations and calculations carried out, the mills are now utilized more fully and the savings effected by the 1500 and tube rolling mills - only with regard to permanent costs - amount to about 500,000 rubles per annum. There are 2 figures and 3 tables.

ASSOCIATIONS: Dnepropetrovskiy metallurgicheskiy institut (Dnepropetrovsk Metallurgical Institute) and zavod im.Dzherzhinskogo (Plant im.Dzherzhinskiy)

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S/133/61/000/002/004/014  
A054/A033

# Coordination of Rolling Mill Operations



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Coordination of Rolling Mill Operations

S/133/61/000/002/004/014  
A054/A033

Part of the simplified graph of the operations in the new rolling shop (the enlarged marks for 1150 indicate that 2 slabs are rolled in this mill simultaneously); the figures indicate the number of heats and the dimensions of the strip after rolling;

Operation and place of operation ①	Time, hour, minutes ②
Feed of ingots - by crane ③	
Blooming 1150 ④	
Shears of the blooming mill ④	to the store of tube rolling mill ③
Furnace feed ⑤	to universal ④
No.1 output feed ⑥	
Furnace No.2 output ⑦	⑧ slab
Mill 900; Shears No.1; Mill 750; Saws; Shears No.2. ⑨	

Card 6/6

MOLOTKOV, L.F.; YUFEROV, V.M.; KRYZHANOVSKIY, A.L.; SHAFRAN, I.K.;  
BORTUNOV, Ye.M.; SOROCHAN, N.G.; MADZHAR, N.I.; VOROB'YEV, A.F.

Investigating pressures during the rolling of universal strips.  
Izv.vys.ucheb.zav.; Chern.Met. 5 no.4:76-81 '62. (MIRA 15:5)

1. Dneprodzerzhinskiy metallurgicheskiy institut i Zavod im.  
F.E.Dzerzhinskogo.

(Rolling (Metalwork)) (Pressure)



SHAPRAN, I.S.; CHAMET, G.Ye.; BOGOSLOVSKIY, Ye.A.; BRESTOK, I.L.;  
KAROFIN, K.S.

Reconstruction of the 1,150 blooming mill drives at the  
Dzerzhinskii Metallurgical Plant. Stal' 24 no.5:432-435  
My '64. (MIRA 17:12)

1. Dneprovskiy metallurgicheskiy zavod im. Dzerzhinskogo.

POLAND/Human and Animal Physiology - Endocrine Glands.

T-9

Abs Jour : Ref Zhur - Biol., No 7, 1958, 32107

Author : Shafran Leslaw

Inst : -

Title : Influence of Cortisone on Estrus Heat.

Orig Pub : Patol. polska, 1956, 7, No 4, 337-340.

Abstract : Twenty ✓ of cortisone per day were introduced to mice ♀ for 15 days. The character of estrus heat did not change. General length of cycle 5-9 days (average 6.9 days), stage of estrus heat 2-4 days (average 3.1 days).

Card 1/1

SAVITSKIY, A.V. [Savitskiy, A.V.]; ZARITS'KA, I.V. [Zarits'ka, I.V.];  
YAKOVLEV, A.F. [Yakovlev, A.F.]; SHAFRAN, L.M.

Change in protein and protein activity of the blood in the  
process of adapting the organism of seamen to the conditions  
of Antarctic sailing. Ukr. biokhim. zhur. 37 no.4:501-509  
(MIRA 18:9)  
199.

I. Kozlovskiy, Leningradskiy gosudarstvennyy universitet i  
Sankt-Peterburgskiy gosudarstvennyy universitet.

L 10976-66 EWT(1)/EWA(j)/EWA(b)-2 JK  
 ACC NR: AP5028391 SOURCE CODE: UR/0016/65/000/009/0021/0024  
 AUTHOR: Yatsenko, A. F.; Korobov, L. I.; Shafran, L. M.  
 ORG: Basin Sanitation and Epidemiological Station of the Black Sea-Azov Sea Maritime Health  
Department, Odessa (Basseynovaya sanepidstantsiya Chernomorsko-Azovskogo  
vodzdravotdela)  
 TITLE: Smallpox immunity in sailors  
 SOURCE: Zhurnal mikrobiologii, epidemiologii i immunobiologii, no. 9, 1965, 21-24  
 TOPIC TAGS: infective disease, disease incidence, epidemiology  
 ABSTRACT: The authors studied the state of smallpox immunity of Soviet sailors and compared it with the immunity of sailors of other countries of Europe, Asia, and Africa. As a result of the investigation, the authors establish that the percent of those reacting positively to inoculation varies in relation to the number of revaccinations in the past, the age of the person inoculated, and the individual reactivity of the person. Appreciable differences were noted between the number of positive reactions in Soviet and foreign sailors: 26% of the Soviet sailors had a positive reaction, 73.2% of the European sailors, and 61.9% of the Asian and African sailors. The percent of those who had a positive reaction in the 30 to 50-year-old age group was much higher (17 — 35% among Soviet sailors and 60 — 70% among foreign sailors) than those aged 20 — 30 years. The author concludes that great care should be  
 Card 1/2 UDC:616.912-097.3-057.656.61

L 10976-66

ACC NR: AP5028391

taken to prevent the importation of smallpox into the USSR by the crew and passengers of foreign vessels. Orig. art. has: 1 table

SUB CODE: 06 / SUBM DATE: 30Apr64 / ORIG REF: 009

Card

2/2

SHAFRAN, L.Ye.; GORDON, G.M.

Characteristics of dusts obtained during the roasting of  
mercury ores in a fluidized bed. Sbor. nauch. trud. Gint  
tsvetmeta no.19:592-594 '62. (MIRA 16:7)

(Mercury ores) (Fly ash)

SHAFRAN, L.Vo.

Physicochemical characteristics of dusts produced during the  
roasting of mercury ores in a fluidized bed. Stor. nauch.  
trad. Gintsvetmeta no.20:116-120 '63. (MIRA 17:12)

CA SHAFRAN R N

Hydrocarbons of the cyclopentane series with a double bond in the side chain. II. Vinyleycyclopentane. A. P. Plate, R. N. Shafran, and M. I. Batuev (Lomonosov State Univ., Moscow). *Zhur. Obshchei Khim.* (1. Gen. Chem.) 20, 472-8 (1950); cf. *C.A.* 39, 45041. 1-Cyclopentylmethanol, secured in 33% yield from  $C_5H_9MgCl$  and *pentylalcohol*, secured in 33% yield from  $C_5H_9MgCl$  and *AcH*, *b.p.* 73-8°, *d*<sub>4</sub><sup>20</sup> 0.9228, *n*<sub>D</sub><sup>20</sup> 1.4560. The 2-isomer, obtained similarly from ethylene oxide in 27% yield, *b.p.* 94-6°, *d*<sub>4</sub><sup>20</sup> 0.9190, *n*<sub>D</sub><sup>20</sup> 1.4576. Treatment of each (10 parts) with 7 parts  $Ac_2O$ , followed by addn. of 1 part of a mixt. of 90  $Ac_2O$  and 10  $H_3PO_4$  (d. 1.7) with stirring 2 hrs. below 38°, gave the corresponding acetates, *b.p.* 76-9°, *b.m.* 170-83°, *d*<sub>4</sub><sup>20</sup> 0.9408, *n*<sub>D</sub><sup>20</sup> 1.4301 (81%), and *b.m.* 98-100°, *b.p.* 103-5°, *d*<sub>4</sub><sup>20</sup> 0.9541, *n*<sub>D</sub><sup>20</sup> 1.4300 (93.5%). Passage of these over glass wool at 5-6 ml./hr. at 500° gave 81% and 83.9% resp. of hydrocarbon, which after distn. over Na, was shown to be identical in both cases. The vinyleycyclopentane thus obtained *b.m.* 98.2-8.5°, *d*<sub>4</sub><sup>20</sup> 0.7706, *n*<sub>D</sub><sup>20</sup> 1.4365. Hydrogenation over Pt-C gave *ethylcyclopentane*, *b.m.* 102.8-3.4°, *d*<sub>4</sub><sup>20</sup> 0.7667, *n*<sub>D</sub><sup>20</sup> 1.4101, while oxidation with  $KMnO_4$  gave *cyclopentanecarboxylic acid*, *b.p.* 215-20°, *d*<sub>4</sub><sup>20</sup> 1.0597, *n*<sub>D</sub><sup>20</sup> 1.4545. The Raman spectrum of the vinyl deriv. gave among other lines the line at 1640  $cm^{-1}$  for its C=C bond, which corresponds to that of monosubstituted ethylenes. G. M. Kosolapoff



CA SHAFRAN

10

Hydrocarbons of the cyclopentane series with a double bond in the side chain. II. Vinylcyclopentane. A. P. Plate, R. N. Shafran, and M. I. Batuev (M. V. Lomonosov State Univ., Moscow). *J. Gen. Chem. U.S.S.R.* 20, 505-11(1950)(Engl. translation). --See *C.A.* 44, 7785c.  
R. M. S.

1951

33584

S/204/61/001/005/002/008

E075/E484

11.0132

AUTHORS: Nazarova, N.M., Freydlin, L.Kh., Shafran, R.N.,  
Litvin, Ye.F.

TITLE: Thermal alkylation of methylcyclohexane with olefins  
under pressure

PERIODICAL: Neftekhimiya, v.1, no.5, 1961, 613-618

TEXT: The authors reported recently that alkylation of cyclohexane and cyclopentane can be achieved thermally (350 to 450°C) under pressure (50 to 200 atm). Further work on alkylation of methylcyclohexane with olefins was carried out to elucidate the influence of side chains on the direction and ease with which the reaction proceeds. The reaction was carried out in a reactor filled with quartz rings. Molar ratios of methylcyclohexane to ethylene were from 2.5 to 3.6 and for propylene 1.4 to 3.2. The space velocity varied between 0.81 and 0.99 litre/hour for ethylene and 0.52 to 1.43 litre/hour for propylene. All experiments with propylene were carried out at 450°C, whereas for ethylene the temperatures varied from 350 to 450°C. Results show that the main product of the reaction of methylcyclohexane with Card 1/3

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E075/E484

Thermal alkylation ...

ethylene is a mixture of methylethylcyclohexanes, the proportions of various isomers differing from their equilibrium concentrations. With propylene the reaction proceeds with more difficulty and the yield of alkylate is lower than that obtained for ethylene (155% of propylene taken and 316% of ethylene respectively). Comparison with previous work (Ref.7: N.M.Nazarova, L.Kh.Freydlin. Dokl. AN SSSR, 137, 1961, 1125) shows that the alkylation of methylcyclohexane proceeds more easily than that of unsubstituted cyclohexane. The reaction begins at a lower temperature (350°C) and pressure (50 atm). The expected formation during the reaction of 1-methyl-1-ethylcyclohexane was not observed, which is explained by thermal instability of hydrocarbons with quaternary carbon atoms. It is postulated that 1,3 and 1,4-isomers are formed by an internal rearrangement of 1,1-isomer or via an intermediate stage of migration of free valency of methylcyclohexyl radical from position 1,1 to positions 1,3 and 1,4. Acknowledgments are expressed to A.L.Liberman and T.V.Vasina for supplying the methylethylcyclohexane samples. Yu.G.Mamedaliyev, Aladdin Kuliyeu and Z.A.Mamedova are mentioned in the article in connection with

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S/204/61/001/005/002/008  
E075/E484

Thermal alkylation ...

their contributions in this field. There are 2 figures, 5 tables and 11 references: 6 Soviet-bloc and 5 non-Soviet-bloc. The four references to English language publications read as follows:

Ref.2: V.J.Komarowsky. J. Amer. Chem. Soc., no.59, 1937, 2715;  
Ref.3: H.Pines, W.Ipatieff. J. Amer. Chem. Soc., v.67, 1945, 1631;  
Ref.4: A.Schneider. J. Amer. Chem. Soc., v.76, 1954, 4938;  
Ref.9: H.D.Orloff. Chem. Rev., no.54, 1954, 347.

ASSOCIATION: Institut organicheskoy khimii AN SSSR  
im. N.D.Zelinskogo (Institute of Organic Chemistry  
AS USSR imeni N.D.Zelinskiy)

SUBMITTED: August 7, 1961

Card 3/3

FREYDLIN, L.Kh.; LITVIN, Ye.F.; SHAFRAN, R.N.

Liquid phase hydrogenation and irreversible catalysis of  
cyclohexene on a skeletal nickel catalyst. Izv. AN SSSR.  
Ser. khim. no.8:1407-1411 Ag '64. (MIRA 17:9)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.

NEFEDOV, O.M.; SHAFRAN, R.N.

Comparative study of various methods of preparation of dichlorocarbene. Izv. AN SSSR. Ser. khim. no.3:538-541 '65. (MIRA 18:5)

1. Institut organicheskoy khimii im. N.D.Zelinskogo AN SSSR.

CHIRIA, I. I.; IUTVIN, Ye. P.; GILSON, A. M.

Hydrogenation of isoprene and 2,4-dimethylbutadiene-1,3 on a  
chelated cobalt catalyst. Neftekhimiya 4 no. 4: 552-557, 1965, Ag  
100. (MIRA 17:10)

, Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.

FREYDLIN, L.K.F.; LITVIN, L.F.; SHAFRAN, R.N.

Hydrogenation of dienes with a system of conjugate double bonds on a skeleton Co-catalyst. *Neftekhimiya* 4 no.5:669-675 S.O. '64.

(MIRA 18:1)

L. Institut organicheskoy khimii imeni N.D.Zelinskogo AN SSSR.



NAZAROVA, N.M.; FREYDLIN, L.Kh.; SHAFRAN, R.N.; LOGINOV, G.A.

Alkylation of cyclohexene by ethylene at elevated temperatures  
and pressures. Neftekhimiia 3 no.1:66-70 Ja-F '63. (MIRA 16:2)

1. Institut organicheskoy khimii AN SSSR imeni Zelinskogo.  
(Cyclohexene) (Ethylene) (Alkylation)

SHAFRAN, V.; ZUBAREVA, T., inzh.

Colossal plans. Za bezop.dvizh. 4 no.2:3-5 F '62. (MIRA 15:5)

1. Glavnyy inzh. inzhenerno-transportnoy masterskoy Instituta  
Genplana Moskvyy (for Shafran).  
(Moscow--Traffic engineering)

SHAFRAN, V.

In 1963. Za bezop.dvizh. 5 no.1:1-2 Ja '63.

(MIRA 16:5)

1. Glavnyy inzh. inzhenerno-transportnoy masterskoy Instituta  
Genplana g. Moskvyy.

(Mowcow--Traffic engineering)

SHAFRAN, V.I.

Opyt ozeleneniia Leningrada (Leningrad's experience in landscape architecture). Moskva, Izd-vo Ministerstva kommunal'nogo khoziaistva RSFSR, 1953. 155 p.

SO: Monthly List of Russian Accessions, Vol 7, No. 8, Nov. 1954

LANTSBERG, Yuliy Saulovich; RUCHEVSKIY, Petr Vyacheslavovich;  
NAKHIMOV, Boris Naumovich; SHAFTAN, V.I., red.

[Lines for the regulation of traffic on city streets]  
Linii regulirovaniia dvizheniia na gorodskikh ulitsakh.  
Moskva, Stroizdat, 1964. 77 p. (MIRA 17:9)

MATVEYEV, S.M., arkhitekt; STRAVINSKAYA, G.A., inzh.-ekonomist;  
SEGEDINOV, A.A., inzh.; SHAFRAN, V.L., inzh.; TROFIMOV, V.G.,  
zhurnalist; YEVSTRATOV, N.F., nauchnyy red.; MYASOYEDOV, B., red.;  
SHLYK, M., tekhn. red.

[The new boundaries of Moscow] Moskva v novykh granitsakh.  
Moskva, Mosk. rabochii, 1962. 151 p. (MIRA 15:7)

1. Institut general'nogo plana g. Moskvy (for Matveyev,  
Stravinskaya, Segedinov, Shafran Trofimov)  
(Moscow--Guidebooks)

DUBROVIN, Yevgeniy Nikolayevich; TURCHIKHIN, Emmanuil Yakovlevich;  
SHAFRAN, Vladimir Leont'yevich; SAMOYLOV, D.S., red.;  
ISEYEVA, R.Kh., red.izd-va; KHENOKH, F.M., tekhn. red.

[City vehicular and pedestrian crossings at various levels]  
Gorodskie transportnye i peshekhodnye peresecheniia v raz-  
nykh urovniakh. Moskva, Izd-vo MKKh RSFSR, 1963. 131 p.  
(MIRA 17:2)

BOGATSKIY, V.I.; IVANOV, A.V.; SHAFRAN, Ye.B.

Oil and gas occurrences in terrigenous sediments of the Vise' stage  
in the middle Pechora Valley. Neftgaz.geol. i geofiz. no.7:6-11  
'65. (MIRA 18:8)

1. Ukhtinskaya tematicheskaya ekspeditsiya.



GANDIN, L.S.; PYATYGINA, K.V.; ONIKUL, R.I.; TITOV, V.M.; SHAFRAN, Z.M.

Diurnal march of temperature in the lower atmospheric layers.

Trudy GGO no.76:3-29 '58.

(MIRA 11:11)

(Atmospheric temperature)

S/081/62/000/017/073/102  
B156/B186

AUTHOR: Shafranek, Karel

TITLE: Desulfurization of petroleum and reduction in the viscosity of fuel oil

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 17, 1962, 473, abstract 17M166 (Chekhosl. tyazhelyaya prom-st', no. 2, 1962, 12 - 17)

TEXT: Certain trends in the technology for refining heavy sulfurous petroleums are discussed. The results of experimental work on Karashuk (Syria) petroleum are given. [Abstracter's note: Complete translation.]

Card 1/1

*SHAFRANOV, A. A.*

VLASOV, V.V., podpolkovnik meditsinskoy sluzhby; LIPSKIY, Ya.I., podpolkovnik meditsinskoy sluzhby; SHAFRANOV, A.A., podpolkovnik meditsinskoy sluzhby

Some aspects of surgical procedures in burns associated with open fractures; experimental observations. Voen.-med.zhur. no.8:20-25  
Ag '57. (MIRA 10:12)

(BURNS, experimental,  
with open fract., surg. (Rus))  
(FRACTURES, experimental,  
with burns, surg. (Rus))

SAVOSTOVA, I.I.; GUBKINA, A.I.

possibility of revealing cryptodispiric salt-dome structures from  
varicetric data. Neftgaz. geol. i geofiz. no.6:35-40 '63.  
(MIRA 17:10)

1. Monkovskiy ordena Trudovogo Krasnogo Znameni institut neftekhimi-  
konnay i gazovoy promyshlennosti im. akad. Gubkina.

SHAFRANOV, A.P.; SKVORTSOV, I.I.

Types of cryptodiapiric salt-dome structures in the Caspian Lowland and their morphological features. Neftegaz. geol. i geofiz. no. 12:14-19 '63. (MIRA 17:5)

1. Moskovskiy ordena Trudovogo Krasnogo Znameni institut neftekhimicheskoy i gazovoy promyshlennosti imeni akademika I.M.Gubkina.

SHAFRANOV, A.P.

Structural features of salt-dome structures in the central part of  
the Volga-Ural interfluve. Trudy MINKHIG no.43:192-201 '63.

(MIRA 17:4)

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
SHAFRANOV B.V.										23									
CA																			
<p>Hygienic evaluation of decentralized ventilation in spinning plant of a viscose rayon factory. B. V. Shafranov, V. D. Kranfel'd, L. F. Glebova, and E. S. Taratuta. <i>Gigiena i Sanit.</i> 1969, No. 6, 27-34.—It was shown that exhaust of <math>CS_2</math>-<math>H_2S</math> waste installed at the individual sites of spinning is effective in voiding the waste matter into the atm. when the exit velocity from a roof stack is 15-20 m./sec. in calm weather. Winds above 4 m./sec. lower the effectiveness significantly insofar as low altitude personnel is concerned. The results are given graphically. Data on conjunctivitis incidence are given in respect to effectiveness of such "individualized" blower installations, showing very favorable results if the intakes are directly above the bobbins and the ducts are in line with the natural convection currents at the machines. Significantly higher <math>H_2S</math> concns. are found in the immediately surrounding territory in the summer than in fall months, but the over-all level is very low (about 1% of exit concn.) if small-diameter high-velocity exhaust stacks are used, since they promote higher air turbulence and better diln. by the atm.</p> <p>G. M. Kosolapoff</p>																			
<p>Instit. Gen. &amp; Communal Hygiene Dept Hygiene, Microbiol. Epidemiol.</p> <p>Instit. Hygiene &amp; Prophylaxis of Disease</p> <p>Moscow Oblast. Sanitation &amp; Hygiene Inst.</p>																			
ASB-51A METALLURGICAL LITERATURE CLASSIFICATION										C-111-111-111									
FROM STYRENE										FROM BOWERS									
LAPDNO 02										LAPDNO 02									
LAPDNO 02										LAPDNO 02									

SHAFRANOV, B.V., kand.med.nauk

Discussion in "Svetotekhnika" on the artificial lighting of  
industrial buildings with natural light. Gig. i san. 26 no.11:  
84-87 N '61. (MIRA 14:11)

(FACTORIES—LIGHTING)



DANTSIG, N.M., prof.; SHAFRANOV, B.V., kand.med.nauk

Review of S.M.Chubinskii's book "Sun rays and their effect on the  
human organism." Svetotekhnika. 7 no.3:27-28 Mr '61. (MIRA 14:8)  
(Solar radiation—Physiological effects) (Chubinskii, S.M.)

SHAFRANOV, K.I.; PREOBRAZHENSKIY, A.Yu, redaktor; KRASHENINNIKOV, K.F.  
tekhnicheskiiy redaktor.

[Our work with the EM-301-5 multi-bucket excavator] Nasha rabota  
na mnogokogshovom ekskavatore EM-301-5. Stalingrad, Oblastnoe  
knigoizdatel'stvo, 1952. 19 p. (MLRA 8:8)  
(Excavating machinery)

24(7)

SOV/48-23-1-23/36

AUTHORS:

Matveyeva, Ye. N., Medvedev, M. M., Shafranov, M. D.

TITLE:

Luminescence Spectra of  $\alpha$ NPO and POPOP in Various Solvents  
(Spektry lyuminestsentsii  $\alpha$ NPO i POPOP v razlichnykh rast-  
voritelyakh)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959,  
Vol 23, Nr 1, pp 108 - 111 (USSR)

ABSTRACT:

The present paper gives the results of investigations con-  
cerning the yield and the spectra of plastic scintillators  
with  $\alpha$ NPO and POPOP as basic activators and also as addition  
to the solutions of paraterphenyl in polystyrene, polyvinyl  
toluene, and poly-2,5-dimethyl styrene  
( $\alpha$ NPO= 2-(1-naphthyl)-5-phenyl-oxazole  
POPOP= 1,4-di-(5-phenyl-2-oxazolyl-benzene) .Measurements of  
spectra are carried out with a variation of the concentration  
of  $\alpha$ NPO and POPOP, and with constant concentration and  
variation of the solvent. The different spectra with POPOP  
and  $\alpha$ NPO are shown by a figure. The spectra are not influenced  
by the solvents. The addition of n-terphenyl increases the  
luminescence yield in comparison to samples containing  $\alpha$ NPO

Card 1/2

Luminescence Spectra of  $\alpha$ NPO and POPOP in Various Solvents SOV/48-23-1-23/36

and POPOP as basic activators. In accordance with existing conceptions (Refs 1,2) it is assumed that here an excitation energy transfer from the solvent to the luminescent impurity is concerned. The intermediate position of the excitation level of  $n$ -terphenyl compared with solvents and the impurity thus increases the possibility of transition of energy from the solvent to the impurity. There are 2 figures, 1 table, and 2 references, 1 of which is Soviet.

Card 2/2



VAN GAN-CHAN [Wang Kang-ch'ang]; VAN TSU-TSZEN [Wang TS'u-tšeng]; DIN DA-TSAO [Ting Ta-ts'ao]; IVANOV, V.G.; KATYSHEV, Yu.V.; Kladnitskaya, Ye.N., Kulyukina, L.A.; NGUEN DIN TY; NIKITIN, A.V.; OTVINOVSKIY, S.Z.; SOLOV'YEV, M.I.; SOSNOVSKIY, R.; SHAFRANOV, M.D.

Investigating the elastic scattering of  $\pi^-$ -mesons with momentum 6.8 BeV/c on protons in a propane bubble chamber. Zhur.eksp.i teor. fiz. 38 no.2:426-431 F '60. (MIRA 14:5)

1. Ob'yedinennyi institut yadernykh issledovaniy.  
(Mesons---Scattering)

ACCESSION NR: AR4046003

S/0058/64/000/007/A021/A021

SOURCE: Ref. zh. Fizika, Abs. 7A206

AUTHORS: Medvedev, M. N.; Shafranov, M. D.

TITLE: Use of film scintillators to extend the spectral sensitivity of photomultipliers and to record strongly ionizing radiation

CITED SOURCE: Sb. Stsintillyatory\* i stsintillyats. materialy\*. Khar'kov, Khar'kovsk. un-t, 1963, 187-190

TOPIC TAGS: thin film, ionization detector, scintillator, photomultiplier, coincidence counting

TRANSLATION: It is proposed to employ scintillating films deposited on a photocathode in order to extend the sensitivity of photomultipliers into the far ultraviolet region. The optimal film was found to contain 2% terphenyl plus 0.1% POPOP in polystyrene. The sensitivity of the cathode with the film, relative to the maximum sensitivity of the photocathode of the FEU-19M photomultiplier with-

Card 1/2

ACCESSION NR: AR4046003

out the film, amounts to 30% in the 320 nm region, 18--23% in 220 nm region, and 18--23% at 220 nm. The optimal film thickness is 0.1 nm. The de-excitation time is  $(2-3) \times 10^{-9}$  sec. The use of a photomultiplier with a scintillating film in fast coincidence circuits greatly simplifies measurements of strongly ionized radiations in large gamma fields or in the presence of fast charged particles.  
T. Razumova.

SUB CODE: NP

ENCL: 00

Card · 2/2



MATVEYEVA, Ye.N.; MEDVEDEV, M.N.; RUBINA, O.G.; SHAFRANOV, M.D.

Luminescence spectrum of pentaphenyl. Izv. AN SSSR. Ser. fiz. 27  
no.6:763-764 Je '63. (MIRA 16:7)

1. Laboratoriya vysokikh energiy Ob'yedinennogo instituta yadernykh  
issledovaniy.

(Pentaphenyl--Spectra)

MATVEYEVA, Ye.N.; MEDVEDEV, M.N.; PISAREVA, M.G.; SHAFRANOV, M.D.

Luminescence of p-vinyl biphenyl. Izv. AN SSSR. Ser. fiz. 27  
no.6:765-766 Je '63. (MIRA 16:7)

1. Laboratoriya vysokikh energiy Ob'yedinennogo instituta  
yadernykh issledovaniy.

(Biphenyl—Spectra)

KANAVETS, V.P.; LEVINTOV, I.I.; MDROZOV, B.V.; SHAFRANOV, M.D.

Polarization in pp-scattering at an energy of 8.5 Bev. Zhur.  
eksp. i teor. fiz. 45 no.4:1272-1275 0 '63. (MIRA 16:11)

1. Institut teoreticheskoy i eksperimental'noy fiziki i Ob"yedi-  
nennyy institut yadernykh issledovaniy.

L 25341-65 EWT(m) DIAAP  
ACCESSION NR: AR4046131

S/0272/64/000/007/0162/0162

15  
B

SOURCE: Ref. zh. Metrologiya i izmeritel'naya tekhnika. Otdel'nyy vy\*pusk, 7.32.997

AUTHOR: Medvedev, M. N. ., Shafranov, M. D.

TITLE: Use of film scintillators to widen the spectral sensitivity of photomultipliers and the recording of strongly ionizing radiation 19

CITED SOURCE: Sb. Stsintillyatory\* i stsintillyats. materialy\*. Khar'kov, Khar'kovsk.  
un-t, 1963, 187-190

TOPIC TAGS: photomultiplier, film scintillator, photomultiplier spectral sensitivity, ionizing radiation counter

TRANSLATION: The article considers techniques for depositing scintillating films on photomultipliers with Sb-Cs cathodes. This renders the instrument sensitive in relation to distant ultraviolet areas of the spectrum (up to 1000-2000 A). Results are given for analyses of the spectral characteristics of photomultipliers and the authors indicate the possible use of these instruments as counters of strongly ionizing radiation.

SUB CODE: EM, OP

ENCL: 00

Card 1/1

L 01294-66 EPA(s)-2/EWT(m)/EPT(c)/EPF(n)-2/EWP(j) CG/RM

ACCESSION NR: AP5020813

UR/0048/ 65/ 029/008/1417/1418

AUTHOR: Matveyeva, Ye. N.; Medvedev, M. N.; Rubina, O. G.; Shafranov, M. D.

TITLE: Scintillation properties of polyphenyls. Report, 13th Conference on Luminescence held in Khar'kov 25 June to 1 July 1964

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 8, 1965, 1417-1418

TOPIC TAGS: luminescence, scintillation, solution property, gamma radiation, radiation detector, organic compound

ABSTRACT: The authors have measured the relative intensities of the scintillations initiated by  $Co^{60}$  gamma rays in solutions of polyphenyls in polystyrene, toluene and phenylcyclohexane. The polyphenyls investigated were: diphenyl, n-terphenyl, n,n'-quaterphenyl, and pentaphenyl. The scintillation intensity increased with concentration at low concentrations, but this effect reached a saturation; the maximum scintillation amplitude of diphenyl and terphenyl was reached at concentrations of 0.05 and 2%, respectively, and increasing the concentration even to 5% did not further increase the intensity. At concentrations up to 0.05% the scintillation intensity increased linearly with the number of phenyl

Card 1/2

L 01294-66

ACCESSION NR: AP5020813

2  
rings in the molecule. The intensity of the scintillations was approximately the same in all three solvents. Orig. art. has: 1 figure and 3 tables.

ASSOCIATION: Laboratoriya vysokikh energiy Ob'yedinennogo instituta yadernykh issledovaniy (High Energy Laboratory, Joint Institute for Nuclear Research) 55

SUBMITTED: 00

ENCL: 00

SUB CODE: OP, NP

NO REF SOV: 002

OTHER: 000

Card 2/2

SCVETKIN, L. V., SHAFRANOV, M. I.

Coal Mines and Mining - Accounting

More about price lists and estimated costs. Ugol', 27, no. 3, 1952.

9. Monthly List of Russian Accessions, Library of Congress, May 195~~8~~<sup>7</sup>, Uncl.  
2

SHAFRANOV, M.M.

"A Reversible Thread Cutting Friction Head" Stanki 1 Instrument, 10, No.8, 1939.

Report U-1505, 4 Oct 1951.



SHAFRONOV, M.M., Engineer

Mbr., Stankinprom (-1945-)

"Designing Special Equipment for Operation Checking," Stanki I Instrument, 16, No. 6,  
1945

BR-52059019

SHAFRANOV, M. M.

Machine Tools-Design

Metal economy b y means of proper technological design. Stan. i instr. 24 no. 3  
1953

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

BEKETOV, A.K.; SHAFRANOV, N.K.

Use of cable vertical shaft guides. Shakht.stroi. no.12:4-6  
'58. (MIRA 11:12)

1. Nachal'nik kombinata Rostovshakhtostroy (for Beketov). 2. Glavnyy inzhener kombinata Rostovshakhtostroy (for Shafranov).  
(Shaft sinking)

SHAFRANOV, N.K.

Using the new UTE instead of the URP timber for horizontal and inclined workings. Shakht. stroi. 4 no.10:22-24 0 '60.  
(MIRA 13:11)

1. Glavnyy inzhener kombinata Rostovshakhtostroy.  
(Mine timbering)

POLYAKOV, N.V.; SHAFRANOV, N.K.; KRAVCHENKO, V.I., kand. tekhn. nauk

"Blasting operations in mining" by E.O.Mindeli. Reviewed by N.V. Polyakov, N.K.Shafranov, V.I.Kravchenko. Ugol' 36 no.2:62-63 F '61.  
(MIRA 14:2)

1. Glavnyy inzhener kombinata Rostovugol' (for Polyakov). 2. Glavnyy inzhener kombinata Rostovshakhtostroy (for Shafranov). 3. Nauchno-issledovatel'skiy i projektno-konstruktorskiy ugol'nyy institut, g.Shakhty (for Kravchenko).

(Blasting)

(Mindeli, E.O.)

SNEGIREV, Yu.D.; VYAL'TSEV, M.M.; LUNOV, E.P.; SHAFRANOV, N.K.

Testing concretes for water permeability. Trudy NPI 113:47-60  
'61. (MIRA 15:2)

(Concrete--Testing)

SHAFRANOV, N.K.

Repairing of the skip shaft lining in the "Severo-Gundrovskaya"  
Mine No. 3. Ugol' 37 no. 9:24-26 S '62. (MIRA 15:9)

1. Glavnyy inzh. kombinata Rostovshakhtostroy.  
(Donets Basin--Mine hoisting)

SHAFRANOV, Nikolay Konstantinovich; SOSNOVSKIY, M.A., kand. tekhn.  
nauk, retsenzent; CHECHKOV, I.V., ved. red.

[Improving mine shaft bottoms] Sovershenstvovanie skolo-  
stval'nykh dvorov shakht. Moskva, Nedra, 1964. 133 p.  
(MIRA 18:1)



1. SHAFIANOV, P.
2. USSR (600)
4. Cotton Growing
7. Growing 108-F variety of large-boll cotton on the Zaporozh'ye State Cotton Farm, Khlopkovodstvo 3 no. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, APRIL 1953, Uncl.

SHAFRANOV, P.A.

~~Some~~ biomorphological characteristics of the Indian lotus (*Nelumbium  
nuciferum* Gartn.) in connection with its introduction. Biul. Glav.  
bot. sada no.30:16-21 '58. (MIRA 11:6)

1. Astrakhanskiy gosudarstvennyy zapovednik.  
(Lotus)

SHAFRANOV, S.K.

Questions for scientific workers. Tekst.prom. 14 no.2:57 P '54.  
(MLRA 7:5)

1. Glavnyy inzhener Volokolamskoy fabriki im. Lenina. (Textile research)

SHAFRANOV, V.D. SHAFRANOV, V.D. CARD 1 / 2 PA - 1/55  
 SUBJECT USSR / PHYSICS  
 AUTHOR - ŠAFRANOV, V.D.  
 TITLE On the Stability of a Cylindrical Gaseous Conductor in a  
 Magnetic Field.  
 PERIODICAL Atomnaja Energiya, 1, fasc.5, 38-41 (1956)  
 Issued: 1 / 1957

The present work, which, like M.KRUSKAL and M.SCHWARZSCHILD, Proc.Roy.Soc. A 233, 348 (1954), employs the method of small oscillations, and which bases its assumptions on ideal conductivity, investigates stability against longitudinal disturbances in the case of the presence of a "longitudinal" field (i.e. in the case of the existence of components of the magnetic field which are directioned along the cylinder).

The system of equations upon which this problem is based consists of the equations of magnetic hydrodynamics for an ideally conductive medium:

$d\vec{q}/dt + q \operatorname{div} \vec{v} = 0$ ,  $\partial \vec{H} / \partial t = \operatorname{curl} [\vec{v} \vec{H}]$ ,  $p = \text{const}$ ,  $q \vec{v} = - \nabla p + (1/c) [\vec{j} \vec{H}]$ .

In the case of equilibrium it applies that  $\vec{v} = 0$ ,  $\partial / \partial t = 0$ ; the cylinder is then homogeneous with respect to axis and azimuth ( $\partial / \partial z = \partial / \partial \varphi = 0$ ), and the

components  $H_z^0$  and  $H_\varphi^0$  are different from zero. Within the cylinder it is assumed that  $H_{\varphi i}^0 = 0$  and  $H_{zi}^0 = \text{const}$ . (The indices i and e relate to the interior and exterior fields respectively. In this case density and pressure are constant with respect to cross section. Disturbances are here investi-

Atomnaja Energija, 1, fasc.5, 38-41 (1956) CARD 2 / 2

PA - 1755

gated (for reasons of simplicity) in LAGRANGIAN coordinates. In approximations which are linear with respect to disturbances the corrections to all quantities are proportional to shift:  $\vec{H} = \vec{H}^0 + \vec{H}^{(1)}(r) e^{i(kz+m\varphi+\omega t)}$  etc. Next, the equations resulting for these corrections are written down. The corrections to the field outside the cylinder are determined from the equations  $\vec{H} = \nabla \Psi, \Delta \Psi = 0$ . Because of the ideal conductivity the magnetic lines of force are withdrawn from the substance parallel to the surface. Therefore the normal component of the field is equal to zero, and the exterior field does not depend on the interior field. For its value on the surface of the exciting cylinder explicit expressions are given. The solution obtained for the corrections is correct in the case of a fully determined eigenvalue  $\omega^2$ . At  $\omega^2 > 0$  and  $\omega^2 < 0$  equilibrium is steady or unsteady respectively. This eigenvalue is determined from the boundary condition (derived from the equation of motion). In the present case this is reduced to the condition  $8\pi p = H_{\varphi e}^2 + H_{ze}^2 - H_{zi}^2$  to be satisfied on the surface of the cylinder. Next, this condition is to be transformed. Besides a positive spectrum of solutions,  $\omega^2 > 0$  (which corresponds to the sound- and ALFVEN waves of the gas in the excited cylinder), this equation also has a branch of eigen values  $\omega_m^2(k)$ , which has a negative sign within a certain domain. In the case of a vanishing longitudinal field this branch is about  $m=0$  and  $m=1$  quite in the negative domain, but if a longitudinal field exists, this branch passes into the positive domain in the case of great  $k$ . In conclusion some special cases are investigated.

INSTITUTION:

SHAFRANOV, V. D.

89-10-23/36

AUTHOR

Shafranov, V. D.

TITLE

On the Physics of Ionized Gases.  
(O fizike ionizirovannykh gazov.)

PERIODICAL

Atomnaya Energiya, 1957, Vol. 3, Nr 10, pp. 356-357  
(USSR)

ABSTRACT

The 3. International Conference on the physical phenomena in ionized gases took place from 11. to 15. June 1957 at Venice. The following were the most important papers:

Allen, England: The nonstability of the discharge in a toroid chamber at 0,5 - 22 torr and some thousands of amperes.

Allen, Reynolds, England: Spectroscopic temperature determination of electrons and ions in a ring discharge at a pressure of from 0,1 to 1,5 mm and 20 kA.

Hennings, Mails, England: Nonstability of toroid discharges in various chambers ( $\phi$  30 and 10 cm) at an argon pressure of from  $10^{-2}$  to  $10^{-3}$  torr.

Bikerton, England: Recording of the discharge characteristic at high flows in a longitudinal

CARD 1/3

89-10-23/36

On the Physics of Ionized Gases.

magnetic field.

Breton, Scharon, France: Discharge phenomena in linear and toroidal chambers.

Kolheit, Anderson, U.S.A.: Transmission of neutrons in a linear momentum discharge in deuterium.

A condenser battery 25 hours at 0,5  $\mu$ F, 50 KV, 200 kA each served as an energy source.

The neutrons were observed at the 2. and 3. change of inclination of the current curve.

By means of scintillation counters it was proved that the neutrons from the domains near the discharge axis (of a diameter of not more than 2 cm) are formed simultaneously on the entire length of the tube.

A number of theoretical lectures dealt with the conditions of the non-stability of magnetically-hydrodynamic discharges (Rosenblut, Hain et al., Bernstein et al., U.S.A.)

CARD 2/3

On the Physics of Ionized Gases.

89-10-23/36

Schlüter, D.D.R. investigated the possibility of heating up the plasma in a slowly changing magnetic field.

Eight participants from the U.S.S.R. were present. There are 12 Slavic references.

ASSOCIATION: None given.  
AVAILABLE: Library of Congress.

CARD 3/3



SHAFRANOV, V. D.

**AUTHOR:** SHAFRANOV, V. D. 56-6-23/56  
**TITLE:** Structure of Shock Waves in a Plasma. (Struktura udarnoy volny v plazme, Russian)  
**PERIODICAL:** Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol 32, Nr 6, pp 1453-1459 (U.S.S.R.)

**ABSTRACT:** In consideration of the difference of electron- and ion temperature the structure of a shock wave in the plasma is dealt with theoretically. The following cases are investigated:  
a) A single shock wave, if the energy exchange between electrons and ions can be neglected, b) A steady shock wave in a strong magnetic field, c) A steady shock wave. (With 2 Tables, 3 Illustrations, and 4 Slavic References).

**ASSOCIATION:** Academy of Science of the U.S.S.R.  
**PRESENTED BY:**  
**SUBMITTED:** 24.11.1956  
**AVAILABLE:** Library of Congress  
Card 1/1

*SHAFRANOV, V.D.*

AUTHOR: Shafranov, V.D.

56-3-24/59

TITLE: Equilibrium of Magnetohydrodynamic Configurations. (0 ravnovesnykh magnitogidrodinamicheskikh konfiguratsiyakh).

PERIODICAL: Zhurnal.Eksperim.i Teoret.Fiziki, 1957, Vol. 33, Nr 3, pp. 710-721 (USSR)

ABSTRACT: The conditions of the equilibrium of a closed system, which consists of a conducting gas and which is under the influence of a magnetic field, are investigated. Between these two equilibria can be established in a closed configuration: a) by gravitation, b) by external gas pressure, c) by the pressure of an external magnetic field. In the chapters 1-3 the following cases are dealt with:

- 1) Gravitating current-carrying ring,
  - 2) Current carrying ring which is situated in a gas atmosphere, the pressure of which is greater than the pressure within the ring
  - 3) Current-carrying ring situated in an homogenous magnetic field.
- Case 2 is of special interest because this system can probably be kept stable.

In chapter 4 the author shows that the configuration of equilibrium corresponds to a hydrodynamic rotor. By means of this analysis a spherical configuration of equilibrium is mentioned.

In chapter 5 an equation is deduced which puts the conditions for an axially-symmetrical configuration.

In the annex the stability-criteria of an ideally conducting cylin-

Card 1/2

Equilibrium of Magnetohydrodynamic Configurations.

56-3-24/59

der, the surface of which is current-carrying, is mentioned.  
There are 2 figures and 5 Slavic references.

ASSOCIATION: AN USSR.

(Akademiya nauk SSSR)

SUBMITTED: March 8, 1957

AVAILABLE Library of Congress.

Card 2/2

SHAFRANOV, V.D.

56-3-59/59

AUTHOR: Shafranov, V.D.

TITLE: The Magnetic Vortex Rings (Magnito-vikhrevyye kol'tsa)  
(Letter to the Editor)  
PERIODICAL: Zhurnal Eksperim. i Teoret. Fiziki, 1957, Vol. 33, Nr 3 (9),  
pp. 831 - 832 (USSR)

ABSTRACT: S. Chandrasekhar (Proc. Nat. Acad. of Sci., 1956, Vol. 42, Nr 273) proved the steadiness of the most simple solution of the equation of the magnetic hydrodynamics of an incompressible perfectly conductive liquid, if the velocity of flow is connected with the magnetic field by the relation  $\vec{v} = \vec{H} \sqrt{4\pi\rho}$ ,  $p + \rho v^2/2 = \text{constant}$ . This solution generalizes a solution which represents magnetohydrodynamical rings. A further generalization of all these solutions is obvious. The equations of the magnetical hydrodynamics of a perfect incompressible liquid with infinite conductivity can be written down as follows:  $\partial \vec{v} / \partial t = -\nabla (p/\rho + v^2/2) + [\vec{J}\vec{H}]c - [\Omega \vec{v}]$

$\partial \vec{H} / \partial t = \text{curl} [\vec{v} \vec{H}]$ ,  $\text{curl} \vec{H} = (4\pi/c) \vec{J}$ ,  $\text{curl} \vec{v} = \Omega$ .  
The author here puts  $\vec{v} = \alpha \vec{H} / \sqrt{4\pi\rho}$ , where  $\alpha$  is any arbitrary constant.  $\Omega = (\alpha/c) \sqrt{4\pi\rho} \vec{J}$  is then obtained and for the

Card 1/2

56-3-59/59

The Magnetic Vortex Rings

first equation -  $\nabla (p + \frac{1}{2} v^2) + c^{-1} (1 - \alpha^2) [\vec{j} \times \vec{H}] = 0$ . For the condition of equilibrium of the magnetohydrodynamical configuration  $\text{curl} [\vec{j} \times \vec{H}] = 0$  is obtained herefrom, and  $\text{curl} [\vec{v} \times \vec{\Omega}] = 0$  for the condition of the steady flow of an incompressible liquid. Thus, a steady flow of an incompressible perfectly conductive liquid with the magnetic field  $\vec{H}$  corresponds to each equilibrium configuration or each steady flow of an incompressible liquid. An analogous formation (which may be described as a magnetic vortex ring) with identical distribution of the magnetic field and the velocity corresponds, for instance, to a ring-shaped current in a magnetic field and to a circularly-shaped vortex. At  $\alpha = 0$  the magnetical vortex ring changes into a magnetohydrodynamical configuration which in equilibrium is at rest, and at  $\alpha = \infty$  it is transformed into an ordinary vortex ring. There are 5 references, 3 of which are Slavic.

ASSOCIATION: AN USSR (Akademiya nauk' SSSR)  
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SHAFRANOV, V.D.

21(7)

PHASE I BOOK EXPLOITATION SOV/1242

Akademiya nauk SSSR. Institut atomnoy energii

Fizika plazmy i problema upravlyayemkh termoyadernykh reaktsiy,  
t. II. (Plasma Physics and the Problem of Controlled  
Thermonuclear Reactions, t. 2) [Moscow] Izd-vo AN SSSR, 1958.  
355 p. 3,000 copies printed.

Resp. Ed.: Leontovich, M.A., Academician.

PURPOSE: This collection contains previously unpublished work of  
members of the Institut atomnoy energii (Institute of Atomic  
Energy) of the Academy of Sciences of the USSR. It is intended  
for scientists interested in this field.

COVERAGE: This book is the second of four volumes of previously  
unpublished work of members of the Institute of Atomic Energy  
during the period 1951-58. The exploitation cards on the  
other volumes in this series have been released under the  
numbers 1241, 1243, and 1244.

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Plasma Physics and the Problem (Cont.)

SOV/1242

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OSOSETS, S. M., SAGDEYEV, R. Z., TRUBNIKOV, B. A., SHAFRANOV, V. D., VOLKOV, T. F.,  
RUDAKOV, L. I.

"Interaction Between Alternating Electromagnetic Fields and High-Temperature  
Plasma."

paper to be presented at 2nd UN Intl. Conf. on the peaceful uses of Atomic Energy,  
Geneva, 1 - 13 Sep 58.

AUTHOR: Shafranov, V. D.

SOV/56-34-6-15/51

TITLE: The Propagation of an Electromagnetic Field in a Medium With Spatial Dispersion (Rasprostraneniye elektromagnitnogo polya v srede s prostranstvennoy dispersiyey)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 34, Nr 6, pp 1475 - 1489 (USSR)

ABSTRACT: This paper derives the general formulae for an electromagnetic field in a semi-infinite homogeneous anisotropic medium with spatial dispersion, it is a generalization of the second part of the well-known paper of Landau (Ref 1). The first part of this paper derives the general formulae which describe the permeation of longitudinal and transverse fields through the above mentioned medium; these formulae may be deduced from the corresponding boundary conditions. The author investigates a monochromatic field with a time dependence of the type  $e^{-i\omega t}$ . The field penetrates (coming from the vacuum) into a medium which fills up the semi-space  $z > 0$ . The spatial dispersion implies a functional relation between the vector of the electrical induction  $\vec{D}$

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The Propagation of an Electromagnetic Field in a  
Medium With Spatial Dispersion

SOV/56-34-6-15/51

and the electrical field strength:  $D_{\alpha}(\vec{r}) = \int K_{\alpha\beta}(\vec{r}, \vec{r}') E_{\beta}(\vec{r}') d\vec{r}'$ .

If the spatial dispersion can be neglected ( in a plasma this corresponds to the neglect of the thermal motion of the electrons) a local connection between  $\vec{D}$  and  $\vec{E}$  is obtained. In a semi-infinite medium the dependence of  $\vec{r}, \vec{r}'$  is connected with the properties of the separating surface. The charges are assumed to be reflected from the boundary like by a mirror. In the general field the electro-magnetic field may be described by an integro-differential equation. Subsequently the author reports on the boundary conditions. The above mentioned integro-differential equation may be solved by expanding all quantities into plane waves. The author then calculates the permeation of longitudinal and transverse fields. The second part of this paper calculates the propagation of a transverse electromagnetic field into a plasma along the magnetic field. For a given frequency  $\omega$  the transverse electromagnetic field in a medium with spatial dispersion, generally speaking, cannot be described as a wave. For any

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The Propagation of an Electromagnetic Field in a  
Medium With Spatial Dispersion

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real case, the electromagnetic field has to be calculated with taking into account the boundary conditions. In a plasma, the field may be represented in the form of 2 parts: The phase velocity of one part of the field depends on the coordinate  $z$  and the other part of the field is an ordinary wave. The author thanks M.A. Leontovich, Member, Academy of Sciences, USSR, who proposed the problem and gave suggestions for this paper. There are 3 figures and 12 references, 12 of which are Soviet.

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Card 3/3



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24.2/20

AUTHORS: Granovskiy, V.L., Luk'yanov, S.Yu., Spivak, G.V. and Sirotenko, I.G.  
 TITLE: Report on the Second All-Union Conference on Gas Electronics

PERIODICAL: Radiotekhnika i elektronika, 1959, Vol. 4, No. 8, pp 1339 - 1358 (USSR)  
 I.M. Rudger'nyy and N.G. Koval'skiy - "New Data on X-ray Radiation During Pulse Discharges".  
 V.A. Khrebtov and M.M. Sukhov-Kaya dealt with the investigation of the neutron radiation in powerful gas discharges in chambers with conducting walls.  
 N.A. Borzakov et al. - "Investigation of the Gas Discharge in a Conical Chamber".  
 M. Gornitskiy et al. - "A Turn of Plasma in Transverse Magnetic Field".  
 I.G. Kiselev - "Data on the Division of a Cathode Spot on Mercury in a Low-pressure Arc" (see p 1289 of the journal).  
 A.E. Robson (England) - "A New Theory of the Cathode Spot" (see p 1295 of the journal).  
 L.M. Brauskova - "Positive Column in a Hydrogen Discharge With Stationary and Pulse Loads".  
 I.G. Nestrashyich and A.A. Iliud - "Current Distribution on the Surface of Electrodes in Electric Pulse Discharges".  
 L.S. Ryk - "Some Properties of Gas Discharges in Low-voltage in Halogen Counters".  
 G.I. Gletova and V.L. Granovskiy - "Comparison of the Initial De-ionization in the Isotopes of Hydrogen (H and D)".

L.A. Kozlitskiy communicated some results on the pre-breakdown processes at low pressures.  
 M.Ya. Vasil'yev and G.I. Zolotarev - "Charge-density Oscillation Waves in Cylindrical Plasma".  
 L. Pekárek of Czechoslovakia communicated some information on the wave-like phenomena in gas-discharge plasmas.  
 B.G. Ruzhnev dealt with the problem of the determination of the energy of fast ions in pulse discharges.  
 B.B. Kadomtsev - "Convection Instability of a Plasma String".  
 S.Y. Ruzhnevskiy and V.D. Shafar'ov - "Theory of a High-temperature Plasma String".  
 The fifth section was presided over by N.A. Kaptsov and dealt with high-frequency currents in gases. The following papers were read:  
 N.Ye. Golant - "Formation of Ultra-high Frequency Pulse Discharges in Mesoscopic Plasmas".  
 G.I. Zolotarev - "On the Boundary Conditions on the Formation and Maintenance of High-frequency Discharges".  
 P.S. Bulkin et al. - "Investigation of a Self-maintained Ultra-high Frequency Pulse Discharge and the Process of its Development".  
 G.M. Zastavker and G.I. Zolotarev - "Some Results of the Investigation of the Formation of Low-pressure High-frequency Discharges".  
 G. Markensau (USA) - "Conductivity of Weakly Ionized Plasma".

A.A. Kuvshinov - "The Conditions of Transition from High-frequency Corona Discharge at Atmospheric Pressure".  
 V.A. Golant - "The Relationship Between the Characteristic of the Ultra-high Frequency Current and the Direct Current in Gas Discharge".  
 B.N. Litvinov analyzed the conductivity of the discharging plasma in the window of a resonance discharge tube.  
 S.M. Lavitskiy and L.P. Shashurin dealt with the applicability of the probe method to high-frequency discharges (see p 1339 of the journal).  
 The paper by V. Ye. Mitsuk et al. was devoted to the investigation of the ultra-high frequency plasma by means of the Stark effect.  
 G.S. Solntsev et al. dealt with the problem of electric fields in a high-frequency discharge at low pressure.  
 Ya. Radzau of Rumania read a paper entitled "High-frequency Discharges in Methane".  
 The work of the sixth section was devoted to the problems of plasma and its radiation; the section was presided over by V.A. Pribludnyy.  
 Iu.M. Kiselev - "On the Problem of the Measurement of the Plasma Temperature by the Probe Method of Plasma".  
 V.A. Simonov - "Oscillographic Measurements in Plasma".  
 V.A. Simonov and A.G. Mileshkin - "Investigation of the Movement of Plasma by Means of a Mass Spectrometer of the Transit Time".  
 A.V. Pribludnyy - "A Method of the Oscillations on a"



SHAFRANOV, V.D.

Equilibrium of a ring-shaped plasma in a magnetic field. Zhur.  
eksp.i teor.fiz. 37 no.4:1088-1095 0 '59.

(MIRA 13:5)

(Plasma (Ionized gases)

SHAFRANOV, V. D.

82607

S/056/60/039/01/22/029  
B006/B063

24.2120

AUTHORS: Sagdeyev, R. Z., Shafranov, V. D.

TITLE: Instability of a Plasma With an Anisotropic Distribution  
of Velocities in a Magnetic FieldPERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki,  
1960, Vol. 39, No. 1(7), pp. 181-184

TEXT: The authors of the present paper study the instability of a plasma with a non-Maxwellian velocity distribution of ions (or electrons). The instability is assumed to have two causes: 1) the existence of a "beam"; 2) longitudinal or transverse "temperature" anisotropy with respect to the static magnetic field. The latter case is studied in this paper. Preceding papers (Refs. 1 and 2) have shown that a convective instability ( $\text{Re}(\omega) \neq 0$ ) may occur in "drift" approximation with a sufficiently strong anisotropy of the ion (or electron) temperature. The "drift" approximation employed in these papers is, however, only applicable if the Larmor radius of all particles is very small compared to the perturbation wavelength, i.e., if the Larmor frequency is very high compared to the vibration frequency.

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Instability of a Plasma With an Anisotropic  
Distribution of Velocities in a Magnetic Field

S/056/60/039/01/22/029  
B006/B063

A transition to higher frequencies is accompanied by instabilities of the type of vibrations with increasing amplitude ( $\text{Re}(\omega) \neq 0$ ). Such a plasma, whose electrical properties are indicated by the tensor  $\epsilon_{\alpha\beta}(\omega, \mathbf{k})$ , is considered, and the occurrence of instabilities is separately studied for electronic and ionic oscillations. It is shown that a plasma located in a homogeneous magnetic field will also become unstable in the case of slight temperature anisotropy  $|T_{\perp} - T_{\parallel}|/T \ll 1$ . This instability is due to those charges in the tail of the velocity distribution which are in cyclotron resonance with the perturbation wave. Finally, the authors thank Academician M. A. Leontovich and B. B. Kadomtsev for their discussions. There are 1 figure and 4 Soviet references.

SUBMITTED: February 25, 1960

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SHAFRANOV, V.D.

Equilibrium of a toroidal plasma column in a magnetic field.  
Atom.energ. 13 no.6:521-529 D '62. (MIRA 15:12)  
(Plasma (Ionized gases)) (Magnetic fields)